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only two tip types are used, encoder 100 may be a simple switch which is closed for the displacement D for one tip type, but not the other. --

IN THE CLAIMS

Please amend claims ~~1-13~~, ~~15-18~~ and ~~20-23~~ and cancel claim ~~19~~ without prejudice or disclaimer.

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1. ~~(Amended)~~ In a pipette having a nozzle to which a tip may be removably mounted, a mechanism for facilitating the removal of the tip from the nozzle including:

a spring loaded ejector sleeve through which said nozzle passes, said sleeve terminating near an end of the nozzle to which a tip is mounted when the sleeve is in a normal position, the sleeve being moved away from said end of the nozzle against a spring load when the tip is mounted to said nozzle; and

said sleeve including a first latch portion which mates with a second latch portion of said pipette when said sleeve is in a retracted position to which said sleeve is moved when the tip is properly mounted to said nozzle to hold said sleeve in said retracted position against said spring load, and a third latch portion operable to unmate said first and second latch portions, freeing said sleeve to return in response to said spring load to the normal position, the sleeve engaging said tip before reaching said normal position to facilitate the removal of the tip.

2. ~~(Amended)~~ The mechanism as claimed in claim 1 including an overforce mechanism operable to supplement said spring load in moving said sleeve to said normal position against a stuck tip to further facilitate removal of said tip.

3. ~~(Amended)~~ The mechanism as claimed in claim 1 wherein said first latch portion is a keyhole slot formed in said sleeve, wherein said second latch portion is a detent having a large portion which fits in an enlarged portion of said slot when said sleeve is in the retracted position and a small portion sized to fit in a narrow portion of said slot, said narrow portion being adjacent said detent except when the sleeve is in the retracted position, and wherein said third latch portion is a button operable for moving said small

portion of the detent into said narrow portion of said slot, whereby said sleeve becomes unlatched.

4. ~~(Amended)~~ The mechanism as claimed in claim 3 wherein said detent is spring biased to move the large portion of the detent into said enlarged portion of said slot.

5. ~~(Amended)~~ The mechanism as claimed in claim 1 wherein said first latch portion is a projection at a proximal end of said sleeve, said second latch portion is a mating lip on a latch plate biased to have the lip engage the projection when the sleeve is in its retracted position, and said third latch portion is a portion of said latch plate which is manually operable to move the plate against its bias to move said lip away from said projection, permitting said sleeve to return to its normal position.

6. ~~(Amended)~~ The mechanism as claimed in claim 5 including an angled surface on said plate positioned to engage an angled surface associated with said sleeve when said latch plate is moved beyond a point where said lip no longer engages said projection to supplement said spring load in moving said sleeve to the normal position against a stuck tip to further facilitate removal of said tip.

7. ~~(Amended)~~ The mechanism as claimed in claim 1 including a mechanism for controlling the force with which the tip is mounted to said nozzle.

8. ~~(Amended)~~ The mechanism as claimed in claim 7 wherein said mechanism for controlling includes mounting said nozzle to be movable away from a tip mounting force and against a bias spring.

9. ~~(Amended)~~ The mechanism as claimed in claim 8 wherein said bias spring has less load than the spring load applied to said ejector sleeve.

10. ~~(Amended)~~ The mechanism as claimed in claim 1 wherein said ejector sleeve is moved away from said end of the nozzle by said tip.

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cont

A 13
11. ~~(Amended)~~ The mechanism as claimed in claim 1 wherein said tip is mounted in a rack of a plurality of tips having a protrusion adjacent each tip, and wherein said ejector sleeve is moved away from said end of the nozzle by the protrusion adjacent the tip being mounted.

12. ~~(Amended)~~ The mechanism as claimed in claim 1 wherein the mating of said first and second latch portions results in an operator perceptible feedback output.

13. ~~(Amended)~~ The mechanism as claimed in claim 12 wherein said operator perceptible feedback output is at least one of an audible output and a tactile output.

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15. ~~(Amended)~~ The mechanism as claimed in claim 14 including an overforce mechanism operable to supplement said bias in moving said ejector to said normal position against a stuck tip to further facilitate removal of said tip.

16. ~~(Amended)~~ The mechanism as claimed in claim 14 including a mechanism for controlling the force with which the tip is mounted to said nozzle.

17. ~~(Amended)~~ The mechanism as claimed in claim 14 wherein there are a plurality of different tip types, each of which contacts both the ejector and the nozzle as a respective tip is mounted to the nozzle and moves the respective tip against a bias force, each tip type having a different base configuration which results in a difference in relative displacement of the nozzle to the ejector, and a mechanism for detecting such difference in the relative displacement to thus identify a tip type.

18. ~~(Amended)~~ A mechanism for facilitating the removal of a pipette tip from a pipette nozzle including a mechanism which stores mechanical energy when the tip is mounted to said nozzle, and which releases the stored mechanical energy when the tip is to be removed to facilitate removal thereof, said mechanism for storing ^{mechanical energy} includes a latching

A14 mechanism operative when said mechanical energy is fully stored, an operator detectable output being generated when said latching mechanism operates.

20. [(Amended)] The mechanism as claimed in claim 18 including a mechanism which limits the force with which the tip is mounted to the nozzle.

A15 21. [(Amended)] The mechanism as claimed in claim 18 including an overforce mechanism for further facilitating removal of a stuck tip.

22. [(Amended)] In a pipette, a mechanism for detecting a type of pipette tip from a plurality of tip types being mounted to a pipette nozzle including:

a sleeve mechanism surrounding said nozzle, at least one of said sleeve mechanism and said nozzle being mounted to be selectively retracted when in contact with a tip as the tip is pressed on said nozzle to be mounted thereto, each tip type having a different base configuration which results in a difference in relative displacement of the nozzle to the sleeve mechanism, and a mechanism for detecting the difference in the relative displacement to thus identify a tip type.

23. [(Amended)] The mechanism as claimed in claim 22 wherein said sleeve mechanism has a selected stroke, and wherein said mechanism for detecting includes a sensor generating an output when the sleeve mechanism is retracted for the selected stroke and a detector for nozzle retraction, said detector output, when said sensor generates the output, being indicative of tip type.

REMARKS

This is a Preliminary Amendment to a U.S. Patent Application No.: 09/873,842 filed on June 4, 2001. Concurrently with this Preliminary Amendment, Applicants enclose a Letter with Proposed Drawing Changes. It is submitted that no new matter has been added by the way of this Amendment. Accordingly, an early and favorable office action is hereby earnestly solicited.